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Opportunity Title: Advanced THz HEB mixers for Astrophysics
Opportunity Reference Code: 0293-NPP-MAR26-JPL-TechDev

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0293-NPP-MAR26-JPL-TechDev

How to Apply All applications must be submitted in Zintellect

Please visit the NASA Postdoctoral Program website for application instructions and requirements: How to Apply | NASA Postdoctoral Program (orau.org)

A complete application to the NASA Postdoctoral Program includes:

1. Research proposal
2. Three letters of recommendation
3. Official doctoral transcript documents

Application Deadline 3/1/2026 6:00:59 PM Eastern Time Zone

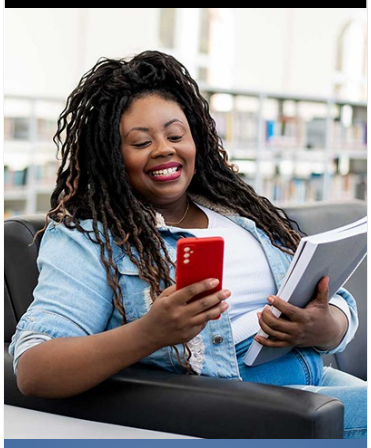
Description **About the NASA Postdoctoral Program**

The NASA Postdoctoral Program (NPP) offers unique research opportunities to highly-talented scientists to engage in ongoing NASA research projects at a NASA Center, NASA Headquarters, or at a NASA-affiliated research institute. These one- to three-year fellowships are competitive and are designed to advance NASA's missions in space science, Earth science, aeronautics, space operations, exploration systems, and astrobiology.

Description:

This research opportunity focuses on the development of the broadband THz Hot-Electron Bolometer (HEB) mixers with the ultimate sensitivity for operation on orbital and suborbital platforms. Such mixers will be important for the advancement of astrophysical heterodyne receivers. The main application of these detectors would be in the THz line spectroscopy of the interstellar molecular clouds and THz interferometry in space. Both NbN and MgB2 based HEBs are of interest. The new topic of the research in the device physics is an exploration of the negative electro-thermal feedback mechanism for mixing. The Integration of the mixers with Quantum Cascade Laser (QCL) local oscillators (LO) is of particular interest. Also important are technologies allowing the integration of the HEB mixers into arrays. The activities include laboratory investigations and optimization of the mixer devices (conversion gain, IF bandwidth, noise temperature, LO power, THz coupling, etc.) and also development and construction of prototype receivers (single-pixel and multi-pixel) based on mechanical cryocoolers. The previous experience with THz mixers, TES detectors, THz receivers & measurements, and corresponding laboratory techniques is required. Microwave experience is a big plus. Microfabrication experience is desirable.

Field of Science:

NPP NASA Postdoctoral Program
ORAU Pathfinder

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Technology Development

Advisors:

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Applications with citizens from Designated Countries will not be accepted at this time, unless they are Legal Permanent Residents of the United States. A complete list of Designated Countries can be found at: https://www.nasa.gov/oiir/export-control.

Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);
- Foreign Nationals eligible for an Exchange Visitor J-1 visa status; and,
- Applicants for LPR, asylees, or refugees in the U.S. at the time of application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

Questions about this opportunity? Please email npp@orau.org

Point of Contact Mikeala

Eligibility Requirements

- **Degree:** Doctoral Degree.